



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/700,625	11/05/2003	Jianmin Wang	50103-522	4865
41552 7590 03/26/2010 MCDERMOTT, WILL & EMERY 11682 EL CAMINO REAL SUITE 400 SAN DIEGO, CA 92130-2047				
EXAMINER AKANBI, ISIAKA O				
ART UNIT 2886		PAPER NUMBER		
NOTIFICATION DATE 03/26/2010		DELIVERY MODE ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

SIP_Docket@mwe.com

Office Action Summary

Application No.

10/700,625

Applicant(s)

WANG ET AL.

Examiner

ISIAKA O. AKANBI

Art Unit

2886

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 December 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1.5-11, 15-18, 21 and 22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1.5-11, 15-18, 21 and 22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

In view of the appeal brief filed on 18 December 2009, PROSECUTION IS HEREBY REOPENED. New grounds of rejection are set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(2) initiate a new appeal by filing a notice of appeal under 37 CFR 41.31 followed by an appeal brief under 37 CFR 41.37. The previously paid notice of appeal fee and appeal brief fee can be applied to the new appeal. If, however, the appeal fees set forth in 37 CFR 41.20 have been increased since they were previously paid, then appellant must pay the difference between the increased fees and the amount previously paid.

A Supervisory Patent Examiner (SPE) has approved of reopening prosecution by signing below:

/TARIFUR R CHOWDHURY/

Supervisory Patent Examiner, Art Unit 2886

Claim Objections

Claim 11 is objected to because the claim in lines 5-6 recites the phrase "with a reflected beam from the surface also being normally incident to the surface," twice.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 5, 8, 10, 11, 15, 17, 18, 21 and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Baker (4,845,356).

Regarding to claims 1, 9 and 21, Baker discloses and shows in figure 1, an apparatus for measuring surface topography of a surface comprising:

a laser (1) applicant's a linearly polarized light source that generates a light beam;

Optics that focuses the light beam on a surface **(10, 23)** to be measured such that a normally incident beams deflection is provided, the optics including:

polarization optics **(7)** such that the incident beam has a first polarization and a reflected beam from the surface has a second polarization different from the first polarization **(col. 2, lines 55-66)**, (examiner notes that when light is incident on the

PBS, inherently it splits the light beam into s and p polarization which are different from each other);

Baker also discloses that the optics including: a half-wave plate (3) that receives the light beam from the linearly polarized light source (col. 2, lines 56-60);

a lens (6) (applicant's long working distance microscope objective) positioned to receive the light beam as an input from the half-wave plate (3) and output a converging light beam (col. 2, lines 55-66); and

a polarizing beam splitter (7) having a 45° reflective surface positioned to reflect/receive as an input the output of the a long working distance microscope objective (6) and produce as an output a light beam (i.e. converging) with the first polarization from the long working microscope objective (6) towards the surface (10, 23) in a normally incident direction to the surface; and

a camera (16, 17) (applicant's a position-sensitive photo detector) positioned to detect the reflected beam (col. 6, lines 12-56).

As to claim 11, Baker discloses and shows in figure 1, method for measuring surface topography of a surface comprising the step of:

a laser (1) directing a beam of light of a first polarization towards a surface (10, 23) to be measured , the beam of light being directed at the surface in a direction normally incident to the surface, with a reflected beam from the surface also being normally incident to the surface (10, 23),

the directing including:

a **laser (1)** generating a collimated beam of linearly polarized light and passing the collimated beam through a half-wave plate **(3)** (**col. 2, lines 55-66**);

converging the collimated beam with a **lens (6)** (**applicant's** a long working distance microscope objective) to output a converging beam (**col. 2, lines 56-60**); and

transmitting the converging beam through a polarizing beam splitter **(7)** in a direction normally incident to the surface (**col. 2, lines 55-66**);

with regard to "changing the polarization of the reflected beam to a second polarization different from the first polarization; directing the reflected beam with the second polarization to a position sensitive detector", (the examiner notes that when light is incident on the PBS, inherently it splits the light beam into s and p polarization which are different from each other); and

determining the topography from measurement taken at the position sensitive detector **(16, 17)** (**col. 6, lines 12-56**).

As to claims 5 and 15, Baker also discloses and shows in figure 1, the limitations wherein the optics further include a quarter-wave plate **(9, 22)** positioned to receive as an input the light beam with the first polarization and output a beam in a direction normally incident to the surface **(10, 23)**, the reflected beam from the surface being reflected by the quarter-wave plate **(9, 22)** towards the position sensitive detector **(16, 17)** with the second polarization.

Wherein the step of changing the polarization includes passing the reflected beam through a quarter-wave plate **(9, 22)** that changes the polarization of the reflected

beam to the second polarization from the first polarization (this is inherent part of the detection system of figure 1) (**col. 3, lines 3-12**).

As to claim 8, Baker further discloses and shows in figure 1 that the **lens (6)** (**applicant's** long working microscope objective) outputs the converging light beam in a direction perpendicular to a normally incident direction to the surface (**23**).

As to claims 10 and 22, Baker also discloses the limitations wherein the optics further include a quarter-wave plate (**9, 22**) positioned to receive as an input the light beam with the first polarization from the polarizing beam splitter (**7**) and output a beam that is normally incident of the surface (**10, 23**),

with a reflected beam from the surface (**23**) having the second polarization and directed by the quarter-wave plate (**9, 22**) through the polarizing beam splitter (**7**) in a direction normal to the surface towards the position sensitive detector (**16, 17**) (**col. 3, lines 3-12**).

As to claim 17, Baker further discloses wherein the step of directing a beam of light includes directing the converging beam in a direction perpendicular to a normally incident direction to the surface (**10, 23**) towards a reflective surface of a polarizing beam splitter (**7**) that reflects the converging beam towards the surface in a direction normally incident to the surface (**10, 23**) (**col. 3, lines 36- 49**).

As to claim 18, Baker also discloses wherein the step of directing the reflected beam includes transmitting the reflected beam through the polarizing beam splitter (**7**) in a normal direction to the surface (**10, 23**) towards the position sensitive detector (**16, 17**) (**col. 3, lines 2-49**).

Claims 1, 5, 8, 10, 11, 15, 17, 18, 21 and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Toida (5,428,447) (cited previously by examiner).

Regarding to claims 1, 9 and 21, Toida discloses and shows in **the modified figure 7 below**, an apparatus for measuring surface topography of a surface comprising:

a laser (121) (applicant's a linearly polarized light source) that generates a light beam;

optics that focuses the light beam on a surface **(127)** to be measured such that a normally incident beams deflection is provided, the optics including:

polarization optics **(128, 125, 126, 145)** such that the incident beam has a first polarization and a reflected beam from the surface has a second polarization different from the first polarization **(col. 26, lines 36-col. 27, line 2) (col. 27, lines 47-51)**, (examiner notes that when light is incident on the PBS, inherently it splits the light beam into s and p polarization which are different from each other);

Toida also discloses that the optics including: a half-wave plate **(128)** that receives the light beam from the linearly polarized light source **(col. 26, lines 38-39) (col. 27, lines 47-51)**;

a lens (124) (applicant's long working distance microscope objective) positioned to receive the light beam as an input from the half-wave plate (128) and output a converging light beam (col. 26, lines 64-67) (col. 27, lines 61-63); and

a polarizing beam splitter (126) having a 45° reflective surface positioned to reflect/receive as an input the output of the a long working distance microscope objective (124) and produce as an output a light beam (i.e. converging) with the first polarization from the long working microscope objective (124) towards the surface (127) in a normally incident direction to the surface (127); and

a camera/position-sensitive photo detector (135) (applicant's position sensitive detector) positioned to detect the reflected beam (col. 2, lines 34-36) (col. 27, line 35).

As to claim 11, Baker discloses and shows in figure 1, method for measuring surface topography of a surface comprising the step of:

a laser (121) directing a beam of light of a first polarization towards a surface (127) to be measured , the beam of light being directed at the surface in a direction normally incident to the surface, with a reflected beam from the surface also being normally incident to the surface (127),

the directing including:

a laser (121) generating a collimated beam of linearly polarized light and passing the collimated beam through a half-wave plate (128) (col. 26, lines 38-39) (col. 27, lines 47-51);

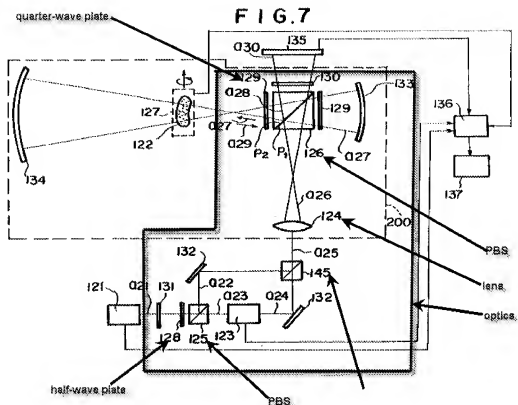
Art Unit: 2886

converging the collimated beam with a lens (124) (applicant's a long working distance microscope objective) to output a converging beam (col. 26, lines 64-67) (col. 27, lines 61-63); and

transmitting the converging beam through a polarizing beam splitter (126) in a direction normally incident to the surface (127) (col. 26, lines 57-col. 27, line 41);

with regard to "changing the polarization of the reflected beam to a second polarization different from the first polarization; directing the reflected beam with the second polarization to a position sensitive detector", (the examiner notes that when light is incident on the PBS, inherently it splits the light beam into s and p polarization which are different from each other); and

determining the topography from measurement taken at the position sensitive detector (135) (col. 2, lines 34-36) (col. 27, line 35).



As to claims 5 and 15, Toida also discloses and shows in figure 1, the limitations wherein the optics further include a quarter-wave plate (129) positioned to receive as an input the light beam with the first polarization and output a beam in a direction normally incident to the surface (127), the reflected beam from the surface being reflected by the quarter-wave plate (129) towards the position sensitive detector (135) with the second polarization and wherein the step of changing the polarization includes passing the reflected beam through a quarter-wave plate (129) that changes the polarization of the

reflected beam to the second polarization from the first polarization (this is inherent part of the detection system of below figure 7).

As to claim 8, Toida further discloses and shows wherein the **lens (124)** **applicant's** long working microscope objective outputs the converging light beam in a direction perpendicular to a normally incident direction to the surface **(127)**.

As to claims 10 and 22, Toida also discloses the limitations wherein the optics further include a quarter-wave plate **(129)** positioned to receive as an input the light beam with the first polarization from the polarizing beam splitter **(126)** and output a beam that is normally incident of the surface **(127)**, with a reflected beam from the surface **(127)** having the second polarization and directed by the quarter-wave plate **(129)** through the polarizing beam splitter **(126)** in a direction normal to the surface towards the position sensitive detector **(135)**.

As to claim 17, Toida further discloses wherein the step of directing a beam of light includes directing the converging beam in a direction perpendicular to a normally incident direction to the surface **(127)** towards a reflective surface of a polarizing beam splitter **(126)** that reflects the converging beam towards the surface in a direction normally incident to the surface **(127)**.

As to claim 18, Toida also discloses wherein the step of directing the reflected beam includes transmitting the reflected beam through the polarizing beam splitter **(126)** in a normal direction to the surface **(127)** towards the position sensitive detector **(135)**.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 6, 7 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baker (4,845,356).

As to claims 6 and 16, Baker discloses and shows in figure 1 a quarter wave-plate (9, 22)

Baker fails to specify which polarization (**p-polarization or s-polarization**) is first or second. However, it is common and known in the art that a wave-plate can be set to a default or un-actuated polarizing state such as (s or p).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention was made to provide a first polarization that is p-polarization and a

second polarization that is s-polarization for the purpose of providing a light beam having a polarization state (p or s) at a level determined by the detector.

As to claim 7, Baker also discloses wherein the polarizing beam splitter (7) includes a 45° reflective surface positioned to reflect the beam reflected from the surface (10, 23) in a direction perpendicular to the direction normally incident to the surface (col. 3, lines 36- 49).

Claims 6, 7 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Toida (5,428,447).

As to claims 6 and 16, Toida discloses and shows in figure 1 a quarter wave-plate (129)

Toida fails to specify which polarization (**p-polarization or s-polarization**) is first or second. However, it is common and known in the art that a wave-plate can be set to a default or un-actuated polarizing state such as (s or p).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention was made to provide a first polarization that is p-polarization and a second polarization that is s-polarization for the purpose of providing a light beam having a polarization state (p or s) at a level determined by the detector.

As to claim 7, Toida also discloses wherein the polarizing beam splitter (126) includes a 45° reflective surface positioned to reflect the beam reflected from the surface (127) in a direction perpendicular to the direction normally incident to the surface.

Response to Arguments

Applicant's arguments/remarks, (see pages Appeal Brief), filed on 18 December 2009, with respect to the rejection(s) of claim(s) have been fully considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Isiaka Akanbi whose telephone number is (571) 272-8658. The examiner can normally be reached on 8:00 a.m. - 4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tarifur R. Chowdhury can be reached on (571) 272-2287. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Isiaka Akanbi

March 16, 2010

Art Unit: 2886

/TARIFUR R CHOWDHURY/

Supervisory Patent Examiner, Art Unit 2886